

- 27 -

We claim:

1. A glass composition comprising about 0.5-30 wt% bismuth oxide, about 0.01-5 wt% zinc oxide, and about 54-70 wt% silica oxide.
5
2. The composition of claim 1, comprising about 1-2 wt% bismuth oxide.
3. The composition of claim 1, comprising about 9-15 wt% bismuth oxide.
- 10 4. The composition of claim 1, wherein the composition comprises less than about 0.1 wt% CoO, ZrO₂ or TiO₂.
- 15 5. The composition of claim 1, wherein the fraction (wt%) of bismuth oxide and zinc oxide in relation to silica oxide is about 0.059 to about 0.29.
6. The composition of claim 1, wherein the glass composition has a softening point of less than about 703°C.
- 20 7. A glass composition comprising about 1-15 wt% bismuth oxide and about 54-70 wt% silica oxide.
8. The composition of claim 7, wherein the composition comprises less than about 0.1 wt% CoO, ZrO₂ or TiO₂.
- 25 9. The composition of claim 7, comprising about 1-2 wt% bismuth oxide.
10. The composition of claim 7, comprising about 9-15 wt% bismuth oxide.

- 28 -

11. The composition of claim 7, further comprising

	Weight Percent (about)
Al ₂ O ₃	1 - 5 wt %
CaO	3 - 7 wt %
MgO	1 - 5 wt %
B ₂ O ₃	4 - 9 wt %
Na ₂ O	9 - 20 wt %

12. The composition of claim 11, wherein the glass composition has a softening point of less than about 703°C.

5

13. A glass fiber comprising about .5-30 wt% bismuth oxide and about 54-70 wt% silica oxide.

10

15. The glass fiber of claim 14, further comprising about 0.1 to about 5 wt% zinc oxide.

16. The glass fiber of claim 13, further comprising

	Weight Percent (about)
Al ₂ O ₃	1 - 5 wt %
CaO	3 - 7 wt %
MgO	1 - 5 wt %
B ₂ O ₃	4 - 9 wt %
Na ₂ O	9 - 20 wt %
K ₂ O	0.0001 - 3 wt %
NiO	0.0001 - 2 wt %
BaO	0.0001 - 5 wt %
Ag ₂ O	0.0001 - 1 wt %
F ₂	0.0001 - 1 wt %

15

- 29 -

17. The glass fiber of claim 13, wherein the fraction (wt %) of bismuth oxide and zinc oxide in relation to silica oxide is about 0.059 to about 0.29.

18. The glass fiber of claim 13, having a density of about 2.5 to about 2.85.

5

19. The glass fiber of claim 13, wherein the elemental leach rate of the glass fiber is about 2.6-4.5 (wt%) over about 3 hours in a solution of boiling H_2SO_4 acid having a specific gravity of about 1.265.

10 20. The glass fiber of claim 13, wherein the elemental leach rate of the glass fiber is about 10.27 to about 16.34 (wt%) over about 3 hours in a 125°F solution of 30% KOH.

15 21. The glass fiber of claim 13, having a K_{dis} of less than about 150 ng/cm²h.

22. A battery separator comprising glass fibers, wherein the glass fibers comprise about 0.5-30 wt% bismuth oxide and about 54-70 wt% silica oxide.

20 23. The battery separator of claim 22, wherein the glass fibers further comprise about 0.1 to about 5 wt% zinc oxide.

25 24. A method of inhibiting hydrogen off-gassing in a lead-acid battery comprising inserting a battery separator comprising glass fibers comprising about 0.5-30 wt% bismuth oxide and about 54-70 wt% silica oxide between the electrode plates of the battery.